Before the
FEDERAL COMMUNICATIONS COMMISSION FCC 96-55
Washington, D.C. 20554

In the Matter of	)	
	)	
Amendment of Parts 2 and 25 of the	)	
Commission's Rules to Allocate the	)	ET Docket No. 96-20
13.75 - 14.0 GHz Band to the	)	RM-8638
Fixed-Satellite Service	)	

NOTICE OF PROPOSED RULE MAKING

Adopted: February 13, 1996 ; Released: February 23, 1996

Comment Date: April 1, 1996
Reply Comment Date: April 16, 1996

By the Commission:

INTRODUCTION

1. By this action, we propose to amend Part 2 of the Commission's Rules to allocate the 13.75 - 14.0 GHz frequency band to the Fixed-Satellite Service[1] ("FSS") on a co-primary basis for Earth-to-space ("uplink") transmissions and to make conforming revisions to the associated service rules in Part 25. We take this action in response to a petition for rule making filed by Hughes Communications Galaxy, Inc. ("Hughes").[2] The adoption of this proposal would accommodate growing demand for FSS services and would provide satellite operators with increased flexibility in the design of their systems. In addition, we propose to adopt domestically the international footnotes that specify the spectrum sharing criteria between incumbent services and the FSS as contained in the United States Proposals for the

[1] The FSS is a radiocommunication service between earth stations at given positions and one or more satellites. A given position may be a specified fixed point or any fixed point within specified areas. In some cases this service includes satellite-to-satellite links, which may also be operated in the inter-satellite service. The FSS may also include feeder links for other space radiocommunication services. See 47 C.F.R. § 2.1.

[2] See Petition for Rulemaking filed by Hughes on March 21, 1995 (RM-8638). See also Public Notice, Report No. 2070, released May 3, 1995, requesting comment on Hughes' Petition.

1995 World Radiocommunication Conference ("WRC-95").[3] We also propose to adopt a United States footnote that would require that all FSS applications requesting the use of any frequency in the 13.75 - 13.8 GHz band segment be coordinated in order to minimize harmful interference to the Federal Government's Tracking and Data Relay Satellite System ("TDRSS"). This action would be consistent with the international allocation for this band made at the 1992 World Administrative Radio Conference ("WARC-92"), and would provide incumbent operations in this band with adequate interference protection from FSS uplinks.

BACKGROUND

2. Historically, the 13.4 - 14.0 GHz band was exclusive Government spectrum allocated to the radiolocation service on a primary basis.[4] There are currently several hundred relatively high-powered mobile radars operated by the United States and other governments in the 13.75 - 14.0 GHz band worldwide. In 1970, the 13.4 - 14.0 GHz band was made available to the non-Government radiolocation service on a secondary basis.[5]

3. The National Aeronautics and Space Administration ("NASA") uses the secondary space research allocation at 13.75 - 14.0 GHz for TDRSS, the space shuttle's rendezvous radar for satellite retrieval, and for active sensors that measure altitude, wind, and precipitation. TDRSS supports space missions by relaying communications between ground stations and low-orbiting spacecraft, including the space shuttle, when the spacecraft are over the horizon and not capable of direct communications with ground stations. The TDRSS forward command link is from a geostationary TDRSS satellite down to a "customer" satellite,

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[3] See United States Proposals for the 1995 World Radiocommunication Conference, July 1995, Document No. 001-E, July 11, 1995 version, pages 205-211. WRC-95 has recently concluded and it adopted most of the United States' proposals. See Final Acts of the World Radio[communication] Conference (WRC-95) Geneva, 1995, Geneva, 17 November 1995 ("Final Acts"). We are reviewing the Final Acts and will consider the international footnotes adopted for the 13.75 - 14.0 GHz band later in this proceeding.

[4] Radiolocation is defined as radiodetermination used for purposes other than those of radionavigation. Radiodetermination is defined as the determination of the position, velocity and/or other characteristics of an object, or the obtaining of information relating to those parameters, by means of the propagation properties of radio waves. Radionavigation is defined as radiodetermination used for the purpose of navigation, including obstruction warning. See 47 C.F.R. § 2.1. See also 47 C.F.R. § 2.106.

[5] See Amendment of Parts 2, 89, 91 and 93 of the Commission's Rules to Add Frequency Bands Newly Available to the Non-Government Radiolocation Service, Order, FCC 70-281, adopted March 18, 1970.

e.g., the space shuttle.[6] The center frequency for the TDRSS forward command link is at 13.775 GHz, and the bandwidth can be varied from six megahertz (13.772 - 13.778 GHz) to 50 megahertz (13.75 - 13.8 GHz). In addition, TDRSS uses the 13.75 - 14.0 GHz band as a downlink to communicate with earth stations at White Sands, New Mexico. An active sensor is a measuring instrument that generates a signal, transmits it to a target, and receives a reflected signal from the target. Information concerning the target is obtained by comparison of the received signal with the transmitted signal. NASA operates three types of active sensors in the band: scatterometers, which measure wind velocity; altimeters, which provide precise altitude measurements; and precipitation radars, which provide rainfall data.[7]

4. At WARC-92, the 13.75 - 14.0 GHz band was allocated worldwide for FSS uplink operations on a co-primary basis with the radiolocation service.[8] WARC-92 also adopted international footnotes 855A and 855B, which specified interim sharing criteria between FSS and incumbent services in the band, including TDRSS. Footnote 855A places restrictions on the fixed-satellite, radiolocation, and radionavigation services in order to allow these services to share the band. Footnote 855B provides that incumbent TDRSS satellites will operate on an equal basis with stations in the FSS and provides for a transition period so that active space research sensors could vacate the band. Further, WARC-92 also adopted International Resolution No. 112, which called for more detailed studies to be conducted regarding these initial sharing criteria to ensure that they would adequately protect incumbent operations.

5. The International Telecommunication Union's Radiocommunication Sector ("ITU-R") Task Groups 4/4 and 7/3 completed these studies and concluded that the spectrum sharing criteria in footnotes 855A and 855B are appropriate and should be adopted on a permanent basis.[9] Domestically, the recommended sharing criteria have been supported by the WRC-95 Industry Advisory Committee, the National Telecommunications and Information

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[6] In addition to the Ku-band (12/14 GHz) TDRSS system, there are S-band (2/2.3 GHz) and C-band (3.7/6.4 GHz) TDRSS systems.

[7] Scatterometers operate in the 13.99356 - 13.99644 GHz band segment, altimeters operate throughout the band, and precipitation radar will operate in the 13.793 - 13.805 GHz band segment. The precipitation radar satellite, called "TRMM," is scheduled to be launched in 1997.

[8] See International Telecommunication Union ("ITU") Final Acts of the World Administrative Radio Conference for Dealing with Frequency Allocations in Certain Parts of the Spectrum (WARC-92), Malaga-Torremolinos, 1992.

[9] See Preparation for International Telecommunication Union World Radiocommunication Conferences, IB Docket No. 94-31, Second Notice of Inquiry, 10 FCC Rcd 4169 at ¶ 71-75 (1995).

Administration ("NTIA"), and the Commission.[10] The U.S. Proposals for WRC-95 included these recommendations in a slightly modified form.[11] The modifications include splitting international footnote 855B into a revised footnote 855B that addresses only TDRSS and a new footnote 855C that addresses only the active sensors. Revised footnote 855B would place greater restrictions on transmitter power for FSS uplinks in the 13.772 - 13.778 GHz band segment than for FSS uplinks in the rest of the band, in order to provide additional protection for the TDRSS forward command link in its critical six-megahertz bandwidth. New footnote 855C would afford the precipitation radar satellite, which is scheduled to be launched in 1997, an additional year of protection from harmful interference from FSS uplinks, and would specify coordination requirements.[12]

DISCUSSION

6. Petition and Comments. On March 21, 1995, Hughes filed a Petition for Rulemaking, requesting that the Table of Frequency Allocations, Section 2.106 of the Commission's Rules, be amended to allocate the 13.75 - 14.0 GHz band on a co-primary basis to the FSS for uplink transmissions for international systems, subject to the technical restrictions set forth in footnotes 855A and 855B.[13] Hughes also requests that conforming amendments be made to the service rules in Parts 25 and 90.[14] Hughes states that an FSS uplink allocation at 13.75 - 14.0 GHz is necessary to enable its international fixed-service communications satellite system, to be known as Galaxy VIII(I), to use the FSS downlink

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[10] Id.. See also Preparation for International Telecommunication Union World Radiocommunication Conferences, IB Docket No. 94-31, Report, 60 Fed. Reg. 40176 (August 7, 1995).

[11] See Appendix A, footnotes 855A, 855B, and 855C.

[12] Specifically, footnote 855C requires that FSS uplinks will not cause harmful interference to active sensors operating in the 13.75 - 14.0 GHz band, until January 1, 2000, and further, that FSS uplinks will not cause harmful interference to space borne precipitation radars operating in the 13.793 - 13.805 GHz band segment, until January 1, 2001. After these transition dates, active sensors will be secondary to FSS uplinks and will have to accept harmful interference from them.

[13] Hughes requests that we adopt footnotes 855A and 855B in the modified form shown in the Second Notice of Inquiry in IB Docket No. 94-31, 10 FCC Rcd 4169 at ¶¶ 71-75 (1995).

[14] Hughes requests that we make the following conforming amendments to Parts 25 and 90: add the 13.75 - 14.0 GHz band and a note limiting the band to international systems to the list of frequency bands set forth in § 25.202(a)(1), and set forth power limits for earth stations in § 25.204(f) and for stations in the radiolocation service in § 90.103(b).

allocation at 11.45 - 11.7 GHz.[15] Hughes states that its Galaxy VIII(I) system would provide state-of-the-art satellite services among the United States, Mexico, the Caribbean, Central America, and South America. Hughes asserts that the 10.95 - 11.2 GHz and 11.45 - 11.7 GHz downlink bands are not paired with any uplink bands, a discrepancy which results in a 500 megahertz shortfall of uplink spectrum available for international FSS use.[16] Hughes argues that its proposed allocation would lessen the shortfall in uplink frequencies available for international FSS use, would implement the WARC-92 Final Acts, and would serve the public interest by maximizing the efficient use of orbital spectrum resources and by furthering the competitiveness of U.S. satellite operators in the provision of private international satellite services. Finally, Hughes notes that the ITU's Space Network List indicates that over one hundred satellite systems worldwide propose to use the 13.75 - 14.0 GHz band, some of which are at locations particularly well-suited to providing service to and from the United States.[17]

7. COMSAT World Systems ("Comsat"), Hughes, and International Private Satellite Partners, Ltd. ("Orion Pacific") filed comments supporting this allocation. Specifically, Comsat states that the allocation is necessary to meet growing demand for international services, that Comsat will itself need access to this band in the United States to offer international satellite services via the Intelsat system, and that it supports adoption of final sharing criteria. Moreover, Comsat states that Intelsat has properly notified the ITU of its intent to use the 13.75-14.0 GHz band to serve the growing demand for satellite services in the global market. Orion Pacific states that the 13.75 - 14.0 GHz band can be paired with frequencies in the 10.95 - 11.2 GHz and 11.45 - 11.7 GHz bands, that the domestic allocation should be subject to footnotes 855A and 855B, and that the use of the band should be restricted to international service only. No party filed comments in opposition to the Hughes petition.

8. Proposal. It appears that there is a growing demand for fixed-satellite services in the Ku-band portion of the spectrum. As Hughes points out in its petition, there are over one hundred satellite systems planned worldwide that would use the 13.75 - 14.0 GHz band, and some of these systems are at locations particularly well-suited for the provision of service to and from the United States. We believe that the growing international and domestic demand for FSS services should be accommodated by making this spectrum available for FSS operations. In addition, this allocation would further the competitiveness of U.S. satellite operators in domestic and international markets and would provide more open and competitive markets for consumers. Further, the allocation of the 13.75 - 14.0 GHz band for uplinks would permit FSS system operators greater flexibility in designing their systems by enabling

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[15] See Hughes' pending application (File Nos. 47-DSS-P/LA-94; CSS-94-018) for authority to construct, launch, and operate its Galaxy VIII(I) system.

[16] See 47 C.F.R. § 25.205, note 2.

[17] See Hughes Petition for Rulemaking at 7.

the co-location of satellites in different frequency bands at the same orbital location.[18] Accordingly, we propose to allocate the 13.75 - 14.0 GHz band on a co-primary basis for FSS uplinks.

9. We also are proposing to make the 13.75 - 14.0 GHz band available for use by both domestic and international FSS systems.[19] This would be consistent with our recent action in IB Docket No. 95-41 eliminating regulations that restrict international FSS operators from providing complete domestic service and restrict domestic FSS operators from providing complete international service.[20] By treating all U.S. licensed geostationary fixed-satellites under the same regulatory scheme, we hope to open markets and increase competition in the fixed-satellite services for both domestic and international operations. We see no need to restrict this FSS allocation to international service as suggested by Hughes. We believe that such restriction is not technically justified and would needlessly impair businesses' ability to meet their customers' needs.

10. We propose to adopt the U.S. proposals for WRC-95 which specify international footnotes 855A, 855B, and 855C as the final sharing criteria between FSS and other operations in this band.[21] We believe that these international footnotes would provide incumbent operations in this band, except for TDRSS as discussed below, with adequate protection from FSS operations. Specifically, footnote 855A provides sharing criteria between the radiolocation and fixed-satellite services; footnote 855B provides protection for the existing TDRSS system; and footnote 855C provides active sensors with interference protection from FSS uplinks for the transition period during which such sensors will migrate to other bands.

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[18] For example, Hughes wishes to co-locate its Galaxy III(H) and Galaxy VIII(I) at 95° West Longitude. The Galaxy III(H) satellite is a hybrid, i.e., combined C- and Ku-band, domestic FSS satellite. The Ku-band portion of the Galaxy III(H) satellite will use 14.0 - 14.5 GHz as the uplink and 11.7 - 12.2 GHz as the downlink. Galaxy VIII(I) would use 13.75 - 14.0 GHz as the uplink and 11.45 - 11.7 GHz as the downlink.

[19] As indicated above, use of the 10.95 - 11.2 and 11.45 - 11.7 GHz downlink bands by the FSS is limited to international systems. We note, however, that prohibition of domestic use of these bands provides technical protection for fixed services operating domestically in the bands. Thus, elimination of the domestic/international distinction in these bands could present significantly different issues than those presented for the 13.75 - 14.0 GHz band.

[20] See Amendment to the Commission's Regulatory Policies Governing Domestic Fixed Satellites and Separate International Satellite Systems, IB Docket No. 95-41, Report and Order, FCC 96-14, released January 22, 1996.

[21] See Appendix A for the proposed modifications to the Table of Frequency Allocations, Section 2.106 of the rules, including the proposed text of footnotes 855A, 855B, and 855C.

11. TDRSS is a critical national asset that provides communication links for U.S. space and satellite operations. We believe that this national asset must be well protected from harmful interference. However, footnote 855B protects TDRSS only in a six megahertz bandwidth from 13.772 - 13.778 GHz. We believe that the entire 13.75 - 13.8 GHz band segment, which is the maximum bandwidth of the TDRSS forward command link, should be protected from harmful interference. Therefore, we propose to require that all FSS applications that request the use of any frequencies in the 13.75 - 13.8 GHz band be coordinated through the Government/non-Government frequency assignment subcommittee ("FAS") process to ensure that interference to TDRSS is minimized. In order to implement this requirement, we propose to add an additional U.S. footnote to the Table of Frequency Allocations, which would read as follows:

> USxxx In the band 13.75 - 13.8 GHz, earth stations in the fixed-satellite service shall be coordinated on a case-by-case basis with Government operations in order to minimize harmful interference to the Tracking and Data Relay Satellite System.

In addition, we observe that TDRSS uses the entire 13.75-14.0 GHz band as a downlink to communicate with earth stations located at White Sands, New Mexico, which will be protected during the normal FAS coordination process.[22]

12. We are also proposing to make conforming amendments to Part 25, generally as suggested by Hughes. These amendments would add the 13.75 - 14.0 GHz band to the list of frequency bands in § 25.202(a)(1); and would set forth power limits for earth stations in § 25.204(f), consistent with the power limits specified in footnotes 855A and 855B. In addition, we propose to amend § 25.202(a)(1) in the following manner. Note 3 (to be renumbered as note 4) of the paragraph would be modified to remove the citation to footnote US234, which has expired, and to add a citation to footnote US292, which states that in the 14.0 - 14.2 GHz band, stations in the radionavigation service will operate on a secondary basis to the FSS. In addition, we propose to add a new note 3 to the paragraph, which, citing footnotes 839 and NG145, would specify that use of the 11.7 - 12.2 GHz band by the FSS in Region 2 is limited to national and subregional systems and that fixed-satellite transponders operating in that band may also be used for broadcasting-satellite transmissions.

13. However, we decline to amend the Part 90 rules governing the radiolocation service, as suggested by Hughes. The non-Government radiolocation service operates in the 13.75 - 14.0 GHz band on a secondary basis only. Thus, such operations are already barred from causing harmful interference to any primary service, including the proposed FSS allocation. Further, the purpose of footnote 855A is to limit the equivalent isotropically radiated power (e.i.r.p.) of high-powered Government radiolocation stations to 59 dBW so that FSS uplinks can share the band. It is unnecessary to apply this limit to low-powered non-

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[22] See International Footnote 855B, pursuant to which TDRSS operates on an equal basis with FSS stations.

Government stations. Currently, type-accepted non-Government radiolocation transmitters operating in the 13.75 - 14.0 GHz band have output powers that range from 0.015 to 1.0 watt. Thus, it is most unlikely that licensees of non-Government radiolocation stations would deploy systems that can operate with an e.i.r.p. of 59 dBW. Accordingly, we see no reason to propose a power limit for non-Government radiolocation stations operating in the 13.75 - 14.0 GHz band. We request comment on all of our above proposals.

14. Finally, we intend, as a ministerial matter, to update and correct the Table of Frequency Allocations. Specifically, we intend to correct typographical errors in the text of international footnotes 854, 855, 856, 857, and 860 and of footnote US110; to correct Table column (6) for the 13.4 - 14.0 GHz band to refer to private land mobile radio as a secondary, not primary, service, and to correct the placement of international footnote 792A in columns (1) through (3) in the 12.75 - 13.25 GHz band. In addition, we intend to update the International Table to reflect the Final Acts of WARC-92 for the 13.4 - 14.0 GHz band. Specifically, the band would be split into the 13.4 - 13.75 and 13.75 - 14.0 GHz bands in order to add the worldwide allocation for FSS uplinks in the 13.75 - 14.0 GHz band. In addition, international footnotes 855A, 855B, and 855C would be added to columns (1) through (3) in the 13.75 - 14.0 GHz band. (Footnotes 855A, 855B, and 855C would also appear in columns (4) and (5), in accordance with our proposal.)

PROCEDURAL INFORMATION

15. Initial Regulatory Flexibility Analysis. The analysis pursuant to the Regulatory Flexibility Act of 1980, 5 U.S.C. Section 603, is contained in Appendix B.

16. Ex Parte Presentation. This is a non-restricted notice and comment rule making proceeding. Ex parte presentations are permitted, provided they are disclosed as provided in Commission rules. See generally 47 C.F.R. Sections 1.1202, 1.1203, and 1.1206(a).

17. Authority. This action is taken pursuant to Sections 4(i), 7(a), 303(c), 303(f), 303(g), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 157(a), 303(c), 303(f), 303(g), and 303(r).

18. Comment. Pursuant to applicable procedures set forth in Sections 1.415 and 1.419 of the Commission's Rules, interested parties may file comments on or before **April 1, 1996**, and reply comments on or before **April 16, 1996**. All relevant and timely comments will be considered by the Commission before final action is taken in this proceeding. To file formally in this proceeding, participants must file an original and four copies of all comments, reply comments, and supporting comments. If participants want each Commissioner to receive a personal copy of their comments, an original plus nine comments must be filed. Comments and reply comments should be sent to Office of the Secretary, Federal Communications Commission, Washington, DC 20554. Comments and reply comments will be available for public inspection during regular business hours in the FCC

Reference Center (Room 239) of the Federal Communications Commission, 1919 M Street, N.W., Washington, DC 20554.

19. Additional Information. For further information concerning this rule making proceeding contact Tom Mooring at (202) 418-2450, internet: tmooring@fcc.gov, Office of Engineering and Technology, Federal Communications Commission, Washington, DC 20554.

FEDERAL COMMUNICATIONS COMMISSION

William F. Caton
Acting Secretary

Appendix A: Proposed Rules

Parts 2 and 25 of title 47 of the Code of Federal Regulations are proposed to be amended as follows:

PART 2 -- FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for Part 2 continues to read as follows:

AUTHORITY: Sec. 4, 302, 303, and 307 of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154, 302, 303 and 307, unless otherwise noted.

2. Section 2.106, the Table of Frequency Allocations, is amended as follows:

a. Remove the existing entries for 12.75 - 13.25 GHz, 13.25 - 13.4 GHz, and 13.4 - 14.0 GHz in columns (1) through (7).

b. Add entries in numerical order for 12.75 - 13.25 GHz, 13.25 - 13.4 GHz, 13.4 - 13.75 GHz and 13.75 - 14.0 GHz in columns (1) through (7).

c. Revise International Footnote Numbers 854, 855, 856, 857, and 860.

d. Add International Footnote Numbers 855A, 855B and 855C.

e. Revise United States Footnote Number US110.

f. Add United States Footnote Number USxxx.

§ 2.106 Table of Frequency Allocations

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International table			United States table		FCC use designators	
Region 1 -- allocation GHz (1)	Region 2 -- allocation GHz (2)	Region 3 -- allocation GHz (3)	Government Allocation GHz (4)	Non-Government Allocation GHz (5)	Rule part(s) (6)	Special-use frequencies (7)
•	•	•	•	•	•	•
12.75 - 13.25 FIXED FIXED-SATELLITE (Earth-to-space) 792A MOBILE Space Research (deep space)(space-to-Earth)	12.75 - 13.25 FIXED FIXED-SATELLITE (Earth-to-space) 792A MOBILE Space Research (deep space)(space-to-Earth)	12.75 - 13.25 FIXED FIXED-SATELLITE (Earth-to-space) 792A MOBILE Space Research (deep space)(space-to-Earth)	12.75 - 13.25 US251	12.75 - 13.25 FIXED FIXED-SATELLITE (Earth-to-space) MOBILE 729A US251 NG53 NG104 NG118	AUXILIARY BROADCASTING (74) CABLE TELEVISION RELAY (78) DOMESTIC PUBLIC FIXED (21) PRIVATE OPERATIONAL-FIXED MICROWAVE (94)	
13.25 - 13.4 AERONAUTICAL RADIONAVIGATION 851 852 853	13.25 - 13.4 AERONAUTICAL RADIONAVIGATION 851 852 853	13.25 - 13.4 AERONAUTICAL RADIONAVIGATION 851 852 853	13.25 - 13.4 AERONAUTICAL RADIONAVIGATION 851 Space Research (Earth-to-space)	13.25 - 13.4 AERONAUTICAL RADIONAVIGATION 851 Space Research (Earth-to-space)	AVIATION (87)	
13.4 - 13.75 RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 853 854 855	13.4 - 13.75 RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 853 854 855	13.4 - 13.75 RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 853 854 855	13.4 - 13.75 RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 US110 G59	13.4 - 13.75 Radiolocation Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 US110	Private land mobile (90)	
13.75 - 14.0 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 853 854 855 855A 855B 855C	13.75 - 14.0 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 853 854 855 855A 855B 855C	13.75 - 14.0 FIXED-SATELLITE (Earth-to-space) RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 853 854 855 855A 855B 855C	13.75 - 14.0 RADIOLOCATION Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 855A 855B 855C US110 USxxx G59	13.75 - 14.0 FIXED-SATELLITE (Earth-to-space) Radiolocation Standard Frequency and Time Signal-Satellite (Earth-to-space) Space Research 713 855A 855B 855C US110 USxxx	SATELLITE COMMUNICATION (25) Private land mobile (90)	
•	•	•	•	•	•	•

INTERNATIONAL FOOTNOTES

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854 *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Bahrain, Brunei Darussalam, Cameroon, the Republic of Korea, Egypt, the United Arab Emirates, Finland, Gabon, Guinea, Indonesia, Iran, Iraq, Israel, Jordan, Kuwait, the Lebanon, Madagascar, Malaysia, Malawi, Mali, Malta, Morocco, Mauritania, Niger, Nigeria, Pakistan, Qatar, Syria, Senegal, Singapore, Sudan, Sri Lanka, Sweden, Chad, Thailand and Tunisia, the band 13.4 - 14 GHz is also allocated to the fixed and mobile services on a primary basis.

855 *Additional allocation:* in Austria, Bulgaria, Hungary, Japan, Mongolia, the German Democratic Republic, Romania, the United Kingdom, Czechoslovakia and the U.S.S.R., the band 13.4 - 14 GHz is also allocated to the radionavigation service on a primary basis.

855A In the band 13.75 - 14 GHz, the e.i.r.p. of any emission from an earth station in the fixed-satellite service shall be at least 68 dBW, and should not exceed 85 dBW, with a minimum antenna diameter of 4.5 metres. In addition the e.i.r.p., averaged over one second, radiated by a station in the radiolocation or radionavigation services towards the geostationary-satellite orbit shall not exceed 59 dBW (see the latest version of Recommendation ITU-R S.1068 for additional information).

855B In the band 13.75 - 14 GHz geostationary space stations in the space research service, for which information for advance publication has been received by the Bureau prior to 31 January 1992, shall operate on an equal basis with stations in the fixed-satellite service; after that date new geostationary space stations in the space research service will operate on a secondary basis. The e.i.r.p. density of emissions from any earth station in the fixed-satellite service shall not exceed 71 dBW per 6 MHz in the frequency range 13.772 - 13.778 GHz until those geostationary space stations in the space research service, for which information for advance publication has been received by the Bureau prior to 31 January 1992, cease to operate in this band. Automatic power control may be used to increase the e.i.r.p. density above 71 dBW to compensate for rain attenuation to the extent that the power flux density at the fixed-satellite space station does not exceed the value resulting from use of 71 dBW e.i.r.p. in clear sky conditions.

855C Until 1 January 2000 (until 1 January 2001 for space borne precipitation radars), stations in the fixed-satellite service shall not cause harmful interference to non-geostationary space stations in the space research and Earth exploration satellite services. After those dates these non-geostationary space stations will operate on a secondary basis in relation to the fixed satellite service. When planning and coordinating networks in the fixed-satellite service in accordance with the provisions of Article 11 (S9) in the band 13.75 - 14 GHz, account should be taken of the information given in the latest version of Recommendation ITU-R S.1069.

856 The use of the band 14 - 14.3 GHz by the radionavigation service shall be such as to provide sufficient protection to space stations of the fixed-satellite service (see Recommendation 708).

857 *Additional allocation:* in Afghanistan, Algeria, Angola, Saudi Arabia, Australia, Bahrain, Bangladesh, Botswana, Brunei Darussalam, Cameroon, China, the Congo, the Republic of Korea, Egypt, the United Arab Emirates, Gabon, Guatemala, Guinea, India, Indonesia, Iran, Iraq, Israel, Japan, Jordan, Kenya, Kuwait, Lesotho, the Lebanon, Malaysia, Malawi, Mali, Morocco, Mauritania, Niger, Oman, Pakistan, the Philippines, Qatar, Dem. People's Rep. of Korea, Syria, Senegal, Singapore, Somalia, Sudan, Sri Lanka, Swaziland, Tanzania, Chad, Thailand and Yemen, the band 14 - 14.3 GHz is also allocated to the fixed service on a primary basis.

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860 *Additional allocation:* in the Federal Republic of Germany, Austria, Belgium, Denmark, Spain, Finland, France, Greece, Ireland, Iceland, Italy, Libya, Liechtenstein, Luxembourg, Norway, the Netherlands, Portugal, the United Kingdom, Sweden, Switzerland, Turkey and Yugoslavia, the band 14.25 - 14.3 GHz is also allocated to the fixed service on a primary basis.

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UNITED STATES (US) FOOTNOTES

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US110 In the frequency bands 3100 - 3300 MHz, 3500 - 3700 MHz, 5250 - 5350 MHz, 8500 - 9000 MHz, 9200 - 9300 MHz, 9500 - 10000 MHz, 13.4 - 14.0 GHz, 15.7 - 17.3 GHz, 24.05 - 24.25 GHz and 33.4 - 36.0 GHz, the non-Government radiolocation service shall be secondary to the Government radiolocation service and to airborne doppler radars at 8800 MHz, and shall provide protection to airport surface detection equipment (ASDE) operating between 15.7 - 16.2 GHz.

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USxxx In the band 13.75 - 13.8 GHz, earth stations in the fixed-satellite service shall be coordinated on a case-by-case basis with Government operations in order to minimize harmful interference to the Tracking and Data Relay Satellite System.

PART 25--SATELLITE COMMUNICATIONS

1. The authority citation for Part 25 continues to read as follows:

AUTHORITY: Secs. 25.101 to 25.601 issued under Sec. 4, 48 Stat. 1066, as amended; 47 U.S.C. 154. Interpret or apply secs. 101-104, 76 Stat. 419-427; 47 U.S.C. 701-744; 47 U.S.C. 554.

2. The table and footnotes in paragraph 25.202(a)(1) are revised to read as follows:

§ 25.202 Frequencies, frequency tolerance and emission limitations.

(a)(1) *Frequency bands.* The following frequencies are available for use by the fixed-satellite service. Precise frequencies and bandwidths of emission shall be assigned on a case-by-case basis.

Space-to-Earth (GHz)	Earth-to-space (GHz)
3.7 - 4.2[1]	5.925 - 6.425[1]
10.95 - 11.2[1,2]	13.75 - 14.0[1]
11.45 - 11.7[1,2]	14.0 - 14.2[4]
11.7 - 12.2[3]	14.2 - 14.5
17.7 - 19.7[1]	27.5 - 29.5[1]
19.7 - 20.2	29.5 - 30.0

[1] This band is shared coequally with terrestrial radiocommunication services.

[2] Use of this band by the fixed-satellite service is limited to international systems, *i.e.*, other than domestic systems.

[3] Use of this band by the fixed-satellite service in Region 2 is limited to national and subregional systems. Fixed-satellite transponders may be used additionally for transmissions in the broadcasting-satellite service.

[4] In this band, stations in the radionavigation service shall operate on a secondary basis to the fixed-satellite service.

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3. Paragraph 25.204(f) is added to read as follows:

§ 25.204 Power limits.

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(f) The e.i.r.p. of any emission from an earth station operating in the frequency band 13.75 - 14.0 GHz shall be at least 68 dBW and shall not exceed 85 dBW, with a minimum antenna diameter of 4.5 meters; except in the frequency band 13.772 - 13.778 GHz, where the e.i.r.p. shall not exceed 71 dBW per 6 MHz. Automatic power control may be used to increase the e.i.r.p. density above 71 dBW to compensate for rain attenuation to the extent that the power flux density at the fixed-satellite space station does not exceed the value resulting from use of 71 dBW e.i.r.p. in clear sky conditions.

Appendix B: Initial Regulatory Flexibility Analysis

Pursuant to Regulatory Flexibility Act of 1980, the Commission finds as follows:

A. Reason For Action: This rule making proceeding is initiated to consider the allocation of an additional 250 megahertz of uplink spectrum to the FSS.

B. Objective: The objective of this proposal is to accommodate growing demand for FSS services and to provide satellite operators with increased flexibility in the design of their systems.

C. Legal Basis: The proposed action is authorized by Sections 4(i), 7(a), 303(c), 303(f), 303(g), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 157(a), 303(c), 303 (f), 303(g), and 303(r).

D. Description, Potential Impact, and Number of Small Entities Affected: This proposal may provide new opportunities for radio manufacturers and suppliers of radio equipment, some of which may be small businesses, to develop and sell new equipment. We are unable to quantify other potential effects on small entities. We invite specific comments on this point by interested parties.

E. Reporting, Record Keeping, and Other Compliance Requirements: None.

F. Federal Rules That Overlap, Duplicate, or Conflict With This Rule: None.

G. Significant Alternatives: None.